

A curious weather attribute is given to the "fever-ague" worm (woolly-bear) by the Nanticoke. By reading the color pattern one can predict the severity of the weather. The months represented in succession from head to tail of the worm are December, January, and February. Elwood Wright tells if there is much black on the head, cold weather is meant, if short black more moderate; of much tan, open month is signified. If it appears black on the head end, brown on other, December will be rough, January and February open. If reversed, December will be open, while January and February will be rough. If totally colored, he explained, "It hasn't fully got its stripes yet."

One wonders whether this is native to the Indian, for I have obtained from the English settlers in the Blue Ridge of Augusta County, Va., a knowledge of the "feeble worm" as they call it, foretelling the weather. Mrs. Jack Kelly, of Stuarts Draft Community, has observed that if the feeble worm is black on either end a cold winter will follow, but if black in the middle, a mild or in-between season will invariably occur. The Nanticoke, who, as their name implies, were great fishermen, called the spring peepers (*Hyla crucifer*) herring frogs because they would always announce the "running" of the herring in the spring.

ICHTHYOLOGY.—*A new anchovy of the genus Anchoviella from the Poti and Parnaíba Rivers of Brazil.* LEONARD P. SCHULTZ and RUI SIMÕES DE MENEZES.

Since Hildebrand (Bull. Bingham Oceanogr. Coll. 3 (art. 2): 1-165, figs. 1-72, 1943) published "A Review of the American Anchovies (Family Engraulidae)" four other papers have appeared or were not included in Hildebrand's revision that deal with South American Anchovies. These are: Fowler, Proc. Acad. Nat. Sci. Philadelphia 93: 124, fig. 2, 1941; *ibid.* 95: 311, fig. 1, 1943; Hildebrand and Carvalho, Copeia, 1948, no. 4: 285-296, figs. 1-4; and Schultz, Proc. U.S. Nat. Mus. 99: 37-54, figs. 4-8, 1949. After comparing the specimens of anchovies which form the basis of this contribution with the species described in the above papers and with related material in the U.S. National Museum collections, we have concluded that our specimens represent an unnamed species.

Anchoviella potiana, n. sp.

Fig. 1

Holotype.—U.S.N.M. no. 112081, from Poti and Parnaíba Rivers, Teresina, State of Piauí, Brazil, collected in September 1949 by Rui Simões de Menezes, standard length 113.7 mm, total length 136.5 mm.

Paratypes.—U.S.N.M. no. 112082, collected along with the holotype and bearing same data, 7 specimens, 107 to 118 mm in standard length. Also 8 specimens in collection of Serviço de Piscicultura, Fortaleza, Ceará, Brazil.

Description.—Detailed measurements were made on the holotype and 15 of the paratypes and these data are expressed in thousandths of the standard length in Table 1. Counts for the new species are recorded in Table 2.

Body compressed, deep, greatest depth at about dorsal origin, 3.1 to 3.4, and head 3.6 to 3.7, both in standard length; head shorter than greatest depth of body; snout bluntly pointed, projecting about $\frac{1}{2}$ its length beyond tip of mandible, about $\frac{3}{4}$ eye, only a little longer than pupil; eye about 4.0 to 4.2 in head; maxillary ending posteriorly in a truncate to a broadly rounded tip that reaches to but not past joint of mandible, contained about 1.3 to 1.4 in head; mandible pointed, slightly curved dorsally at tip, reaching a vertical line a little behind rear edge of posterior nasal margin; teeth minute, very numerous, along edges of both jaws, cheek 7.0 to 8.2 and postorbital length of head 5.5 to 5.8 in standard length; angle of cheek varies from 35° to 44°; gill rakers long, slender, the longest about 3 times in postorbital length of head, each gill raker on the first four arches with two rows of numerous minute spinules on the inner or posterior side; no gill rakers on the posterior side of the first three arches, but short rakers occur on posterior side of fourth gill arch; depressed length of dorsal fin 1.4 to 1.5 in head; the first branched rays of dorsal fin reaching to opposite or not quite to tip of last dorsal ray when fin is depressed; distal margin of dorsal slightly concave when

TABLE 1.—MEASUREMENTS MADE ON SPECIMENS OF ANCHOVIELLA POTIANA, N. SP., RECORDED IN THOUSANDTHS OF STANDARD LENGTH

Measurements	Measurements by Schultz ¹							Measurements by Menezes ¹							
	Holo- type	Paratypes						Paratypes							
		113.7	113	107	111	109	111.4	118	103	112	115	104	109	104	109
Standard length in millimeters.....	113.7	113	107	111	109	111.4	118	103	112	115	104	109	104	109	109
Greatest depth.....	321	315	302	313	323	303	316	320	303	296	308	312	308	321	321
Length of head.....	282	286	278	270	278	278	263	252	259	252	250	248	260	239	239
Postorbital length of head.....	175	186	171	173	179	170	178	145	161	156	154	147	163	147	147
Snout.....	46	44	51	43	44	45	47	58	45	43	48	55	58	46	46
Eye.....	73	65	70	75	72	73	69	68	62	61	67	64	67	73	64
Length of mandible.....	187	192	192	186	189	186	191	155	152	156	144	156	173	156	165
Longest gill raker.....	64	63	69	59	62	60	64								
Interorbital (bony) space.....	67	59	65	62	62	65	58	78	80	78	77	73	77	73	73
Tip of snout to: Rear edge of maxillary....	219	217	221	203	211	209	210	214	205	213	221	206	221	211	211
Dorsal origin.....	519	514	500	504	517	516	508	534	518	513	519	514	519	541	514
Anal origin.....	627	638	650	624	657	605	624	640	625	617	673	624	654	642	642
Length of anal fin base.....	282	269	280	266	279	269	267	281	285	278	288	275	288	284	284
Length of dorsal fin base.....	121	127	118	122	127	135	131	136	125	139	135	138	144	128	138
Length of pectoral fin.....	180	165	171	173	185	168	176	175	179	178	173	183	173	183	183
Length of pelvic fin.....	102	99	106	106	114	97	105	97	107	104	111	101	111	106	106
Length of pectoral axillary scale.....	104	89	106	110	84	114	93	97	98	96	106	101	96	83	101
Least depth of caudal peduncle.....	123	124	125	117	125	124	119	116	125	113	115	119	125	119	119

¹ Differences between the two sets of figures such as head length, postorbital length of head, length of mandible, interorbital space, and length of dorsal fin base are probably caused by different methods of measuring.

TABLE 2.—COUNTS RECORDED FOR ANCHOVIELLA POTIANA, N. SP.

Number of fin rays															
Dorsal			Anal				Pectoral			Pelvic			Branched caudal		
													Dorsal lobe	Ventral lobe	
iii	10	11	iii	22	23	24	25	i	11	12	i	5	6	9	8
16	7	9	16	2	8	5	1	16	4	12	23	2	21	15	15

Number of scales

Vertical rows from gill opening to caudal base			Dorsal origin to mid-ventral line	
41	42	43	8	9
10	5	1	10	5

Number of gill rakers on first arch

Above angle						Below angle										
47	48	49	50	51	52	51	52	53	54	55	56	57	58	59	60	61
2	3	2	2	4	3	1	—	1	1	3	2	3	4	—	—	1

distended; caudal fin deeply forked; distal margin of anal fin concave anteriorly, first anal rays longest; first dorsal ray of pectoral fin longest; tips of pectoral fins reaching to or not quite to insertion of pelvics; pelvic fins reaching about $\frac{1}{2}$ to $\frac{2}{3}$ the way to the anal origin; dorsal fin origin about equidistant between tip of snout and base of caudal fin; origin of anal fin about under base of last or next to last dorsal ray; axillary scale of pectoral fin extending one-half to two-thirds the way along length of pectoral fin; intestine with one main loop.

Color in alcohol.—Straw-colored in alcohol dorsally, sides and belly silvery; dorsal side and tip of snout with black pigment, predorsal area of back with dark pigment intensified just behind occiput to form a blotch and then another just in front of dorsal origin; rear margin of caudal fin dusky; upper sides and back with some dusky pigmentation.

Remarks.—This new species is chiefly characterized by its numerous gill rakers on both limbs of the arches in conjunction with other characters which make it referable to the genus *Anchoviella*, such as lack of gill membranes across isthmus, presence of very numerous minute teeth on edges of both jaws; origin of anal behind that of dorsal fin; long, slender, numerous gill rakers on both limbs of gill arches; vertebrae about 41; one main loop of intestine; anal origin under rear of base of dorsal fin; maxillary broadly rounded or truncate posteriorly and not reaching past joint of mandible; dorsal origin about equi-

distant between tip of snout and base of caudal fin.

The occurrence of 47 to 52 + 51 to 61 gill rakers on the first gill arch of any species referable to the genus *Anchoviella* might cause one to cast doubt on our generic allocation, but comparing this new species with various members referred to the other genera of American anchovies leaves no doubt in our mind that *potiana* is an *Anchoviella*. The details of the gill rakers, long, slender, with the two rows of fine spines on inner edge, and shape of maxillary among other characters remove it from the genus *Anchovia*, which also has species with very numerous gill rakers, but a posteriorly pointed maxillary.

A. potiana would run down through Hildebrand's key to the species of *Anchoviella* on pp. 109–111 closest to *A. pallida* but does not agree with that species because *pallida* has 28 to 34 + 36 to 45 gill rakers and *potiana* has 47 to 52 + 51 to 61 on first gill arch. Fowler (1941, *l.c.*) described *Anchoviella iheringi* from the Rio Jaguaribe, Brazil, and this was not included in Hildebrand's revision but it has only 14 + 19 gill rakers, far too few to be close to *potiana*. Hildebrand and Carvalho (1948, *l.c.*) described two new species of *Anchoviella* from Brazil, *A. victorae* and *A. nitida*, with 21 to 23 + 29 to 33 and 18 to 20 + 23 or 24, respectively, on first gill arch of both species. Thus *victorae* and *nitida* are not close to *potiana*. We have not noticed any other species of *Anchoviella* in the literature.

Named *potiana* after the Poti River of Brazil.

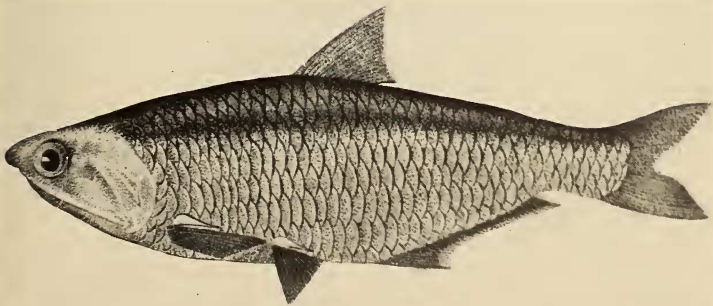


FIG. 1.—Drawing of one of the paratypes of *Anchoviella potiana*, new species, by Mario Dias-Maia, Serviço de Piscicultura, Fortaleza, Ceará, Brazil.